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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/691,816	10/23/2003	John Rausch	200312423-1	6311

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HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, CO 80527-2400

EXAMINER

DO, AN H

ART UNIT	PAPER NUMBER
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2853

DATE MAILED: 06/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n No.

10/691,816

Applicant(s)

RAUSCH ET AL.

Examiner

An H. Do

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-- Th MAILING DATE of this communication appears on the cov r sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) 1-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 24-32 and 34-44 is/are rejected.
- 7) ☒ Claim(s) 33 and 45 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 10/23/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

The Response to Restriction/Election Requirement filed on 19 May 2004 has been acknowledged.

Election/Restrictions

1. Applicant's election without traverse of Group I, claims 24-45 in the reply filed on 19 May 2004 is acknowledged.
2. Claims 1-23 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 19 May 2004.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 24-26, 28, 34-38, and 40 are rejected under 35 U.S.C. 102(e) as being anticipated by Mantell et al (US 5,900,892).

Mantell et al discloses in Figures 2-4 the following claimed features:

Regarding claim 24, an orifice plate (14) for a fluid ejection device, the orifice plate (14) comprising:

-a first layer (a layer where sidewall is shown in Figures 3 and 4) formed of a metallic material (column 4, lines 38-43) and having a first side (bottom surface) and a second side (top surface) opposite the first side, the first layer having an orifice (22) defined in the first side thereof and a first opening (the narrower width of the sidewall 23) defined in the second side thereof, the first opening communicating with the orifice (22), and

-a second layer (70) formed of a polymer material (column 4, lines 28-37) and having a second opening (opening on top of sidewall 23) defined therethrough, the second layer (70) disposed on the second side (top surface) of the first layer and the second opening communicating with the first opening (the narrower width of the sidewall 23),

wherein a diameter of the orifice (22) and a diameter of the second opening (opening on top of sidewall 23) are both greater than a minimum diameter of the first opening (the narrower width of the sidewall 23).

Regarding claim 25, wherein the second layer (70) is formed after the first layer (a layer where sidewall is shown in Figures 3 and 4).

Regarding claim 26, wherein the first layer is electroformed (column 4, lines 38-43) and the second layer (70) is deposited on the first layer (column 4, lines 19-21).

Regarding claim 28, wherein the polymer material of the second layer (70) includes a photoimageable polymer (column 3, lines 46-53).

Regarding claim 34, a fluid ejection device (Figures 5-10), comprising:

-a substrate (the lower portion where heater plate 34 formed thereon) having a

fluid opening (not shown in Figures but known to have an opening for supplying fluid) formed therethrough;

- a drop generator (40) formed on the substrate; and

- an orifice plate (14) extended over at least a portion of the drop generator (40, Figs. 7 and 8),

wherein the orifice plate (14) includes a first layer (a layer where sidewall is shown in Figures 3 and 4) formed of a metallic material (column 4, lines 38-43) and a second layer (70) formed of a polymer material (column 4, lines 28-37), wherein the first layer has an orifice (22) and a first opening (the narrower width of the sidewall 23) communicated with the orifice formed therein, and the second layer (70) has a second opening (opening on top of sidewall 23) communicated with the first opening formed therein, and wherein a diameter of the orifice (22) and a diameter of the second opening (opening on top of sidewall 23) are both greater than a minimum diameter of the first opening (the narrower width of the sidewall 23).

Regarding claim 35, wherein the second opening of the second layer (70) forms a fluid chamber (Figures 6 and 7, elements 42, 46) for the drop generator (40), wherein the fluid chamber (42, 46) communicates with the fluid opening of the substrate (column 5, lines 63-67).

Regarding claim 36, wherein the drop generator (40) includes a firing resistor formed within a thin-film structure (Figure 7, element 37), wherein the thin-film structure (37) is adjacent to the substrate (Figure 6) and the orifice plate (14) is supported by the thin-film structure (37, Fig. 6).

Regarding claim 37, wherein the orifice plate (14) is adhered to a bonding layer (38), wherein the bonding layer is adjacent (Fig. 6) to the thin-film structure (37).

Regarding claim 38, wherein the first layer of the orifice plate (14) is electroformed (column 4, lines 38-43) and the second layer (70) of the orifice plate (14) is deposited on the first layer after the first layer is formed (column 4, lines 19-21) (column 4, lines 19-21).

Regarding claim 40, wherein the polymer material of the second layer (70) of the orifice plate (14) includes a photoimageable polymer (column 3, lines 46-53).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 27, 29-31, 39 and 41-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mantell et al (US 5,900,892) in view of DeBoer et al (US 6,345,880).

Mantell et al does not disclose the following claimed features:

Regarding claims 27 and 39, wherein the metallic material of the first layer includes one of nickel, copper, an iron/nickel alloy, palladium, gold, and rhodium.

Regarding claims 29 and 41, a protective layer disposed on the first side of the first layer.

Regarding claims 30 and 42, wherein the protective layer is provided within the orifice and the first opening of the first layer.

Regarding claims 31 and 43, wherein the metallic material of the first layer includes one of nickel, copper, and an iron/nickel alloy, and the protective layer includes one of palladium, gold, and rhodium.

DeBoer et al teaches the followings:

Regarding claims 27 and 39, wherein the metallic material of the first layer (5) includes one of nickel, copper, an iron/nickel alloy, palladium, gold, and rhodium (column 4, lines 14-20) for the purposes of obtaining wettability and removing air bubbles (column 4, lines 53-58).

Regarding claims 29 and 41, a protective layer (inner walls 29 have metal surfaces) disposed on the first side of the first layer for the purposes of obtaining wettability and removing air bubbles (column 4, lines 53-58).

Regarding claims 30 and 42, wherein the protective layer (inner walls 29 have metal surfaces) is provided within the orifice (25) and the first opening (opening of layer 5, 7 or 11) of the first layer for the purposes of obtaining wettability and removing air bubbles (column 4, lines 53-58).

Regarding claims 31 and 43, wherein the metallic material of the first layer includes one of nickel, copper, and an iron/nickel alloy (column 4, lines 14-20), and the protective layer (inner walls 29 have metal surfaces) includes one of palladium, gold, and rhodium (column 4, lines 14-20) for the purposes of obtaining wettability and removing air bubbles (column 4, lines 53-58).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the metallic material of the first layer includes one of nickel,

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copper, an iron/nickel alloy, palladium, gold, and rhodium, a protective layer disposed on the first side of the first layer, wherein the protective layer is provided within the orifice and the first opening of the first layer, and the metallic material of the first layer includes one of nickel, copper, and an iron/nickel alloy, and the protective layer includes one of palladium, gold, and rhodium as taught by DeBoer et al into Mantell et al, for the purposes of obtaining wettability and removing air bubbles (column 4, lines 53-58).

7. Claims 32 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mantell et al (US 5,900,892) in view of Murthy et al (US 6,612,032).

Mantell does not disclose the following claimed features:

Regarding claims 32 and 44, wherein the first layer and the second layer each have a thickness in a range of approximately 5 microns to approximately 25 microns.

Murthy et al teaches the followings:

Regarding claims 32 and 44, wherein the first layer and the second layer each have a thickness in a range of approximately 5 microns to approximately 25 microns (column 3, lines 19-32, the disclosed range from 1 to 25 microns) for the purpose of attaching to the printhead chip (column 3, lines 19-22).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the first layer and the second layer each have a thickness in a range of approximately 5 microns to approximately 25 microns as taught by Murthy et al into Mantell et al, for the purpose of attaching to the printhead chip (column 3, lines 19-22).

Allowable Subject Matter

8. Claims 33 and 45 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: it is the combined limitations of "wherein the first layer and the second layer each have a thickness of approximately 13 microns." It is this combination, which is not found, taught or suggested in the prior arts.

Contact Information

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to An H. Do whose telephone number is 571-272-2143. The examiner can normally be reached on Monday-Friday Flexible.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on 571-272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



AD
June 14, 2004

B. F. 11-
June 14, 2004